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Submarginal land on the upper Ganaraska

SUMMARY OF The Ganaraska Report

A STUDY IN LAND USE WITH RECOMMENDATIONS FOR THE REHABILITATION
OF THE AREA IN THE POST-WAR PERIOD

WITH

INTRODUCTION, RECOMMENDATIONS AND TABLE OF PROJECTS
AND COSTS

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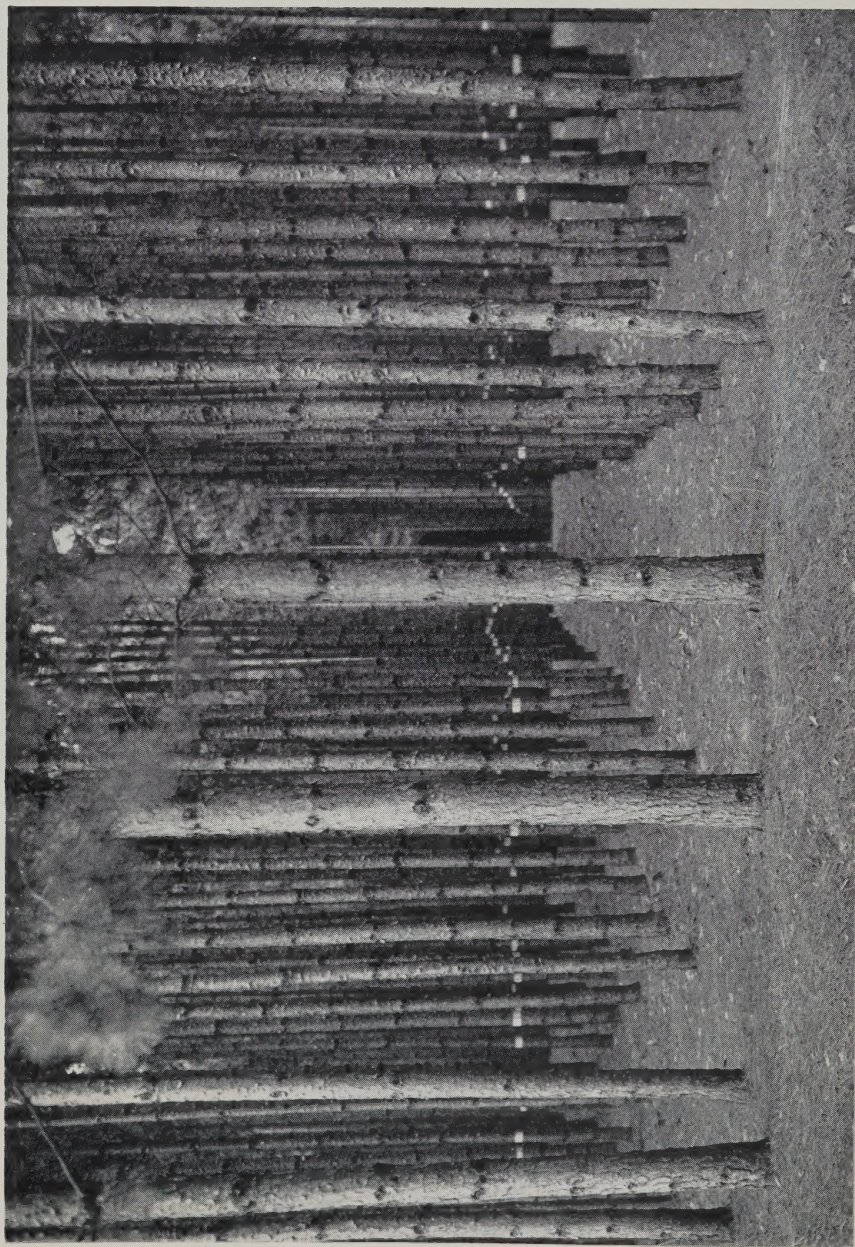
The Ganaraska River periodically floods the town of Port Hope and has caused damage in one year to the extent of a quarter million dollars.

OFFPRINT NOTE

This booklet, which is published by the O.C.R.A. contains a summary of THE GANARASKA WATERSHED, the report on a comprehensive conservation survey of the Ganaraska Watershed area in southern Ontario, sponsored jointly by the Dominion and Ontario governments, and other excerpts which illustrate the nature of the study. The full report is now in the press and will be available shortly from the office of the King's Printer, Parliament Buildings, Toronto, Ontario.

A.H.R. and L.C.M.

February 12, 1944.



A plantation of Red or Norway Pine in Southern Ontario twenty-seven years old. Such plantations not only provide healthy outdoor work but also valuable yields of timber for the future.

INTRODUCTION

BY DR. R. C. WALLACE

DETERIORATION of soil, due in large measure to the removal of forest cover, has given rise to serious problems in many parts of Canada. The soundest and most economical methods must be found by which such land may be brought back into productive use. It is now well recognized that conservation projects should be included among the major enterprises, both for providing employment in the immediate post-war period and over the longer term, to help to stabilize the economy as a whole. They should also be a source of sound public investment at times when private investment declines. The organization of this work on a nation-wide basis will not be realized unless the techniques are fully understood. This is the special post-war application of the present study.

On any basis, conservation is a pressing need. It is far from sufficiently realized how urgent the task of soil conservation is. If southern Ontario, in which the Ganaraska region lies, be taken as one of the older areas of Canadian settlement, it was estimated twenty years ago that 8,500 square miles of land was marginal or submarginal for agriculture. Recent observations show that in spite of the expanded conservation programmes of the government in recent years, the submarginal areas are growing larger, the water in streams and wells is becoming less, and erosion of different types, including top-soil washing on agricultural land, is increasing. At the present rate at which remedial measures are being applied, it is estimated that it would take several hundred years to deal with the problem.

Conservation work, in Ontario as elsewhere, needs to be greatly accelerated. The post-war period should be regarded not merely as an emergency, but as a time of great opportunity for programmes designed to re-establish the value and use of basic resources. If these programmes are planned systematically, and from the broad viewpoint which is desirable, they can provide a variety of employment. Much of the work will be temporary or seasonal; but a proper policy of conservation, and the undertaking of a series of projects all across the country, should also provide a number of long-term or permanent jobs. "Conservation" is apt to be interpreted as either soil restoration or reforestation; but what is really involved is the survey of all resources, leading to multiple-purpose rehabilitation. As this report indicates, a considerable variety of remedial projects is called for, involving opportunities for training and education. They are opportunities that ought to appeal, not only to men demobilized from the services, but to others who will be looking for new occupations, temporary or permanent, after the war.

It is now recognized that conservation and rehabilitation programmes should extend to a whole region. In particular, a watershed area sets the natural limits to such regions so far as water, soil, vegetation and forest resources are concerned. The Prairie Farm Rehabilitation (P.F.R.A.) programmes are the most important example in Canada, but the Tennessee Valley (T.V.A.) is probably the most outstanding example of positive regional development. Compared to these, the Ganaraska Watershed area is small; but its importance is greater than its size. The area was deliberately chosen from the older settlement areas of Eastern Canada to demonstrate what intensive surveys and plans for future work should aim at. It was undertaken not as a routine or maintenance survey, but as a much needed piece of research in Canadian conservational procedure. Its purpose is to give more exactness to (1) the specific procedures and technique involved in the conservation and rehabilitation of a given area, (2) the cost of the necessary remedial projects, (3) the amount and type of employment that will be provided. The techniques include the preliminary surveys, as well as projects and services to be undertaken, both immediate and long-term. It thus provides an opportunity to review and improve the technique of conservation surveys, such as are still necessary in other parts of southern Ontario as well as elsewhere in Canada. And in particular it has been developed as far as possible as a gauge or yardstick by which the cost and employment possibilities of larger projects can be computed.

The area through which the Ganaraska River runs is approximately one hundred square miles in extent. Around the Port Hope area, where the river empties into Lake Ontario, there are still flourishing farms. But a great part of the headwaters is today a barren waste. Its prosperous days of lumbering, settlement and substantial contribution to Canadian wealth are merely history, although history that is all too recent in terms of the exploitation and exhaustion of resources. While the major purposes of the survey were to determine how a balanced redevelopment of the resources of the watershed area could be carried through, it has seemed valuable, in order to point the lesson of the lack of conservation, to recapitulate some of this history.

The principal work of analysing the resources has been undertaken as comprehensively as possible. Thanks to the contributions of the various specialists, the surveys extend to climate, soils, vegetation, forestry, physical and economic aspects of agriculture, plant diseases, entomology, wild life, water-flow and utilization. The field work for the basic land use survey was done under the general direction of Mr. A. H. Richardson, chairman of the Interdepartmental Committee appointed by the Government of Ontario; and, as indicated in the report, many specific surveys have been added. The result is that the report includes scientific data of types not usually included in routine survey

reports. From the experience of such techniques, it is hoped that future standard surveys can be improved and expedited.

The initiation of the survey goes back to the Guelph Conference. In the spring of 1941, several groups interested in the conservation of natural resources sent delegates to a meeting at the Agricultural College at Guelph, for the purpose of formulating a programme, and of urging government participation in such projects for the post-war period. The Guelph Conference included in its personnel municipal officers, naturalists, hunters and fishermen, war veterans, foresters, agriculturists, biologists, and teachers, and was a representative cross-section of the citizens of the province. Subsequent to this meeting, representation was made to the Dominion Advisory Committee on Reconstruction and to the Prime Minister of the Province of Ontario, with the result that the Dominion and Ontario Governments agreed to collaborate in a sample or "type" survey. Subsequently a similar agreement to share the costs of publication of the report was reached.

The practical conclusions of the report are that in the Ganaraska area a rehabilitation programme can be carried through in two years with the assistance of 500 men at an approximate cost of \$500,000, exclusive of the cost of the land which would have to be acquired. The projects would include woodlot improvement, tree planting, erosion control, dam construction, the organization of recreational centres, and farm improvement. What applies to this area applies in a general way to other areas of a similar kind. The report may, therefore, be taken as a type report, of general significance for the conservation and rehabilitation of all our resources throughout Canada. And in evaluating the estimates of costs of the Ganaraska plan, it should be remembered that this would provide for only a small area in need of such treatment. The amount will have to be multiplied many times to take care of all the needy areas of the country.

The report has not been designed solely for the specialist. It does not content itself with facts and figures, but presents the cause and effect of changes in the area in an illuminating way. A liberal number of illustrations supplement the text; in themselves they tell a story of unwise settlement and land use, and the urgent necessity for rehabilitation. It is to be hoped that this contribution to our literature on conservation will bear good fruit, both in stimulating public interest and in developing programmes ready for action.

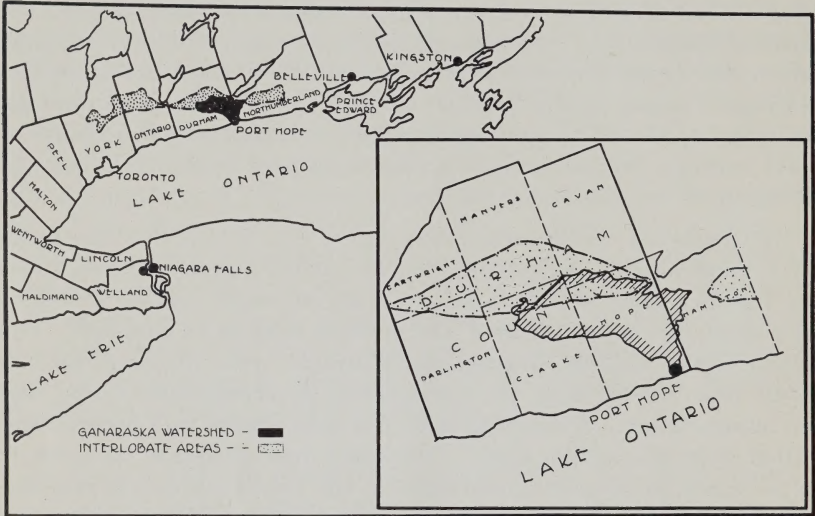
Robt. C. Wallace

Queen's University, Kingston, Ontario,
December 21st, 1943.

SUMMARY OF THE REPORT

PART ONE—SETTLEMENT

1. The Ganaraska Watershed is an area of approximately 103 square miles, in Durham and Northumberland Counties, Ontario, lying north and west of the town of Port Hope. It is drained by the river of the same name, which empties into Lake Ontario at the above town.



2. Settlement commenced about the old Indian village site at the mouth of the river. As early as 1793, loyalists commenced to arrive at this point, and here the town of Port Hope had its beginning. The town has been known by different names; first, those given by the Indians, then Smith's Creek, for a short time Toronto, and from 1819 as Port Hope. Colonization advanced northward from the lake and several villages came into being, which supplied the farming communities. From 1837 to 1881, settlement expanded rapidly. The population of the rural areas, as well as the town of Port Hope, reached a high mark in 1881, which has not since been equalled. During this period there was great activity in lumbering, milling and numerous small industries in the villages. After 1881, due to the near exhaustion of timber and the fact that much of the land in the north was of poor agricultural quality, young people commenced to migrate from the area, with the result that the population decreased and several small communities disappeared altogether, while those remaining are only a skeleton of their former selves.
3. The first land transfers from the Indians to the whites, were made in 1784 and 1788. In 1795 the first land survey was made and the town-

ships along the lake front were laid out. Land grants for settlement followed quickly after the surveys, and by 1860 most of the land had been alienated from the Crown. Early roads for the most part followed old Indian trails, and new roads were projected as settlement advanced northward, some of which, after 1843, were maintained by toll gates. Four railroads have been built in the area, and those serving the district at the present time are the C.N.R. Main Line, the C.N.R. Peterborough Branch, and the C.P.R. Lake Shore Line.

From the earliest days, the harbour at Port Hope has played an important role in the life of the community, and up to comparatively recent times was the main shipping point for lumber, grain and other produce.

4. Throughout the history of the watershed, the forest has formed a "back drop" for the whole area in all its commercial and community life. Commencing with the export of masts for the Royal Navy and squared timber for the British market, down through the several forest products with which we are familiar to-day, such as lumber, shingles, cooperage, fuel, ties, road materials and fencing. Timber was responsible for many small industries in the villages around which the community life centered. These supplied the farmers with tools, vehicles, building material, furniture and cabinet making. The forest also supplied the early settlers with maple syrup, potash and tanbark.
5. The watershed is well supplied with springs, most of which take their rise directly or indirectly from the morainic uplands at the north. Snow water and rain, which is impounded in the depressions of this area, sinks into the gravel and sandy soil and appears at lower levels as head-water springs or ground water, which supplies wells lower down the watershed. Of the 289 wells on the whole watershed, 224 are reported as having adequate water supply, 26 reported the supply as being usually adequate, while 38 reported the supply as inadequate.

The Ganaraska River (21 $\frac{3}{4}$ miles in length) is not large in comparison with some other rivers in southern Ontario. It is, more correctly, a group of small rivers and streams which empty into the main river a few miles above the town of Port Hope. Due to the fact that the river rises in hilly country, most of the streams drop very quickly in elevation for the first three or four miles. Also because a large percentage of this part of the watershed is deforested, erosion is severe. As no gauging stations have been established on the river, it is impossible to give accurate figures of the volume of water coming down the river at different times.

The use of the river for waterpower began in 1795. A total of 45 mills of different types have been in operation on the river, the peak being reached in 1861, with 36 mills in operation.



Headwaters of one of the main branches of the Ganaraska River

Floods have occurred on the Ganaraska periodically from 1813 to the present, due partly to the removal of forest growth on the steep upper slopes, and have caused much damage to mill property and to the town of Port Hope, as evidenced by the numerous reports in local papers and diaries.

6. Although soil erosion has been going on since the beginning of time, its control on this continent did not receive serious attention until 1935. Erosion and silting are on the increase. Seventy-five per cent of the silting in the Port Hope harbour is caused by the river carrying soil from the watershed. Dredging has been carried on since 1875, and over 32,000 cubic yards have been taken out in one year. Loss of soil in this way can be controlled by modern methods of agriculture such as contour plowing, strip cropping, etc., and the proper allocation of land for crops, permanent pasture and woodland.
7. Salmon, speckled trout, sturgeon, passenger pigeons, grouse, beavers, muskrats, raccoons, hares, wolves, deer, bears—all these were found throughout the Ganaraska area before the white man came and the keeping of historical records. To-day, Lake Ontario salmon and passenger pigeons are extinct; the sturgeon fishery, at the river's mouth, is com-

paratively insignificant; bears are gone; beavers, deer, and wolves are almost locally extinct; speckled trout, grouse and hares are greatly depleted.

PART TWO—SURVEYS

8. The outstanding influence upon the climate in the Gananaska area is caused by its proximity to Lake Ontario. A very definite moderation, due to the lake influence, is seen in the immediate vicinity of the Lake Ontario shore, while the modification in climate diminishes as one ascends the slopes. On the morainic upland the climate is definitely colder, exhibiting sharper winters and more backward springs than occur on the rest of the drainage area.
9. Soils data is basic to any present or proposed land use problem. The soils map which accompanies the report indicates a broad tract of marginal and submarginal land, approximately 20,000 acres in size, which is recommended for combined forestry and agricultural purposes. Thirteen different soil types and twenty-five series are described, with notes on occurrence, profile, topography, drainage, natural vegetation and agriculture. Soils are also grouped in four classes, on the basis of their suitability for general farm crops such as are usually grown on any mixed farm in this region.
10. The problem of soil erosion on farms in certain parts of Ontario must be faced more systematically in the near future. The problem has been studied thoroughly on a representative area of the Gananaska. Soils are described and the percentages of the area being eroded are listed. Use capability of different classes is described and suggested cropping practices by the use of special conservation methods are recommended. If erosion is allowed to go unchecked in this area, further reductions in crop yields and universal land abandonment may be expected. Erosion can be controlled, and greater returns can be obtained from the land, if soil-saving and soil-improving measures are carried out.
11. The proposed Gananaska Forest Area, comprising approximately 20,000 acres, which is the major recommendation of this report, supports 55 farmers and their families, who are located for the most part on poor soil and are farming extensively, with varying degrees of success. Crop yields for 1940-1942 averaged 13 per cent below the average for the whole Gananaska Watershed. Total assessed value of all taxable land is estimated at \$121,500, with buildings for the same area assessed at \$41,611. Average assessed value of land in the Forest Area of Hope Township was \$7.70 per acre, and in Clarke Township \$4.90 per acre. Live stock sales averaged \$468 per farm and were slightly more than 50 per cent of the total revenue from all sources. The average net cash income averaged

\$459 per farm and \$315 per worker in 1940. The yearly cash wage for hired help in Ontario this same year averaged \$289. More than 65 per cent of all buildings in the proposed forest area were classed as poor, or poor to fair. On the basis of soil productivity, no soil in the proposed forest area was classed as good, 24.7 per cent was considered fair, 6.5 was poor to fair, and the remainder was poor or waste land. As the size of farm increased, the net returns per farm and per man increased. As crop yields increased, the net cash income and capitalization per farm increased. Sixteen of the 49 farms in the proposed forest area had a net cash income greater than \$1,000. Condition of buildings on the farmstead reflected the productivity of the land—the farm with the poorest buildings had yields 20 per cent below average, while farms with the best buildings in the area were only 8 per cent below the average for the watershed.

The average level of living of 33 farmers in the proposed forest area is lower than for the rest of the watershed, and for a good many farms the level is so low that insufficient necessities are obtained, and almost nothing in the way of advancement goods and recreation, which are considered as part of the Canadian level of living.

12. The land use and resources survey on which much of this report is based, was planned to cover each section of each lot on the watershed. The different items listed for study were as follows: crop land, permanent pasture, plantable land, woodland, forest plantations, streams, springs, ponds, wet spots, flooded land, kettle areas, wells, dams, soils, slope, remains of buildings, fences, quality and size of trees in open fields, and on old fence lines, road conditions, vegetation and wildlife. By means of maps, aerial photographs and reports, the above data was gathered and compiled for incorporation into the text of this report.

Land use on the whole area is discussed under Cropland (51.8%), Woodland (23.31%), Plantations (2.53%), Plantable land (18.19%) Severely eroded land (3.23%), and Towns (1.66%).

A total of 718 woodlots were reported on, of which 28.2% are classed as hardwoods, 16.3% as conifers, and 55.5% as mixed stands; the bulk of the area being classed as young stands. Grazing is permitted in 75.6% of the woodlots. Fires seldom occur. Clear-cutting, especially for fuel wood, is common, particularly in the northern section.

Most of the plantable land consists of the poor soils in the north, with small areas scattered throughout the farms in the south. Erosion is severe on the hills to the north, where also most of the forest plantations are found.

13. A check list of trees and woody plants was made in a representative area of the watershed, chiefly for the purpose of comparing the present

flora with changes which may occur as the area is rehabilitated. Observations were also made on the main species of grasses.

Forest insects were collected to determine the distribution of insect populations, especially those causing serious damage to woodland and young plantations. Recommendations for future management are also outlined.

Good forest management is reflected in the health of the woods and, conversely, damage by disease is often a sign of mismanagement and neglect. Proper management should be instituted to improve the health of the woodland, and white pine should be encouraged on sites naturally suited to it. Pathological conditions of the whole area are described, with suggestions for improving the stand.

14. For carrying out future surveys, it is recommended that an Ontario Conservation Board be appointed, composed of scientifically trained men, within and without the Government, and that full co-operation be given by all Departments of the Government.

The control of runoff and erosion on farm land is provided for by improved methods of agriculture such as contour plowing and strip cropping on the gentle slopes, pasture on the steeper slopes and woodland on the hills.

Courtesy of the U.S. Soil Conservation Service



PART THREE—CONSERVATION MEASURES

15. The most important conservation measure recommended is the establishing of a 20,000 acre forest on marginal and submarginal land at the north of the watershed. Here hundreds of men could be given helpful outdoor work in tree planting, the control of badly eroded areas, thinning and improvement work in existing woodlots, fencing, road building and other types of work incidental to the establishing of a forest property.
16. Throughout the whole watershed, exclusive of the proposed forest and the river protection area, there are small areas of waste land on private farms. Owners should be encouraged to plant these and where areas are too large for individual effort, municipalities should assist. The extension of such work is already provided for by the Government.

Some system of controlled cutting of woodlots should be established. Present cutting is done in a haphazard way, in some areas at least. Some worn-out woodlots might profitably be turned into cropland, but where the woodlot has a direct bearing on conservation, clear-cutting should be stopped.

17. Since the middle of the last century the town of Port Hope has been flooded periodically. Two reports dealing with remedial measures have been prepared by consulting engineers. Their recommendations have to do only with engineering projects in the town, and no consideration is given to the rehabilitation of land at the headwaters of the river, whence a large amount of the water originates. The people of Port Hope should be interested in a scheme of flood prevention which includes the whole watershed.

Three large dams, with storage for 17,500 acre feet of water, are indicated for the reduction of floods and the increasing of summer flow. It is also recommended that some of the old dams be rebuilt to impound water for agricultural and wildlife ponds.

18. The main streams and tributaries of the Ganaraska are fairly well protected by woodlots. These should be extended, where necessary. Where farm land bordering the river is subject to top washing, this should be controlled by contour plowing, strip cropping, permanent pasture, and reforestation.

The Ganaraska area lends itself to the establishment of recreational centres and three such sites are indicated.

The white pine blister rust should be controlled on certain parts of the watershed by eradicating the alternate host of the disease, namely the botanical family ribes (gooseberries and currants).

Other remedial measures providing employment are: restocking streams with fish; forest insect surveys; gathering maple syrup; planting of permanent snow fences on highways; roadside planting; the collecting of tree seed; nursery practice, and miscellaneous works such as building bridges, culverts, telephone lines, fire towers, camp fireplaces and trails, restoring springs, building forest foot trails, removing old buildings, protecting stream banks, harvesting ice, and erecting historical monuments.

19. Private land owners have carried out remedial work in reforestation. The township of Clarke has established two small demonstration forests, and the United Counties of Northumberland and Durham established a county forest in 1928, in the northern section of the watershed, comprising an area of 1,074 acres. Progress made thus far indicates that such methods cannot hope to solve the problem of conservation on the whole area.

PART FOUR—ADMINISTRATION

20. The only part of the area where large scale purchases of land would have to be made, is on the proposed Ganaraska Forest. Most of this area is classed as marginal or submarginal land, and for the most part should be used for growing timber. The areas of better farm land within the forest could still be used for agricultural purposes. Methods of acquiring land are discussed under transfer by private sale, maximum price per acre, agreements, control by existing legislation, life lease, tax delinquent land, and expropriation.

Cost of land in the proposed forest is compared with the cost of land now comprising the two county forests established by the United Counties of Northumberland and Durham, within which municipality the Ganaraska area lies. A table of land costs for thirteen county forests in the Province is given. Finally, the cost of land in the proposed forest is computed from the assessed value and placed at \$9.25 per acre, or a total of \$182,250.00 for the whole forest.

21. The cost of work projects is based on the Civilian Conservation Corps of the United States Government, which at one time had an enrolment of 322,000 men, doing largely conservation work. The equipment and supervision of a unit of 200 men for one year cost \$234,500, less an item of \$25,000 for equipment, which in the case of the Ganaraska could be supplied by the Army after the war.

Provision for a supervisory staff of non-technical foremen is provided for by the establishment of a training school.

22. After a conservation project is established, provision must also be made for its permanent supervision. The Grand River Valley Conserva-

tion Commission in Ontario, and the Muskingum River Conservancy District in Ohio, are described as suggested plans for such supervision. Both projects were started by the people concerned, and legislation has been passed to cover these projects. It is recommended that wider legislation be enacted in Ontario so that any section of the Province, where a conservation problem is acute, may proceed with remedial measures immediately after the preliminary requirements of the Act have been fulfilled.

RECOMMENDATIONS

Stated or Implied in this Report

PERTAINING TO LEGISLATION

That:

- 1—An Ontario Conservation Board be appointed, composed of scientifically trained men from within and without the Government, representing all the sciences, for the purpose of planning and carrying out conservation surveys.
- 2—Legislation be enacted combining the best features of the Grand River Valley Conservation Commission and the Muskingum Watershed Conservancy District, so that municipalities in any part of Ontario may undertake a similar conservation programme.
- 3—Controlled cutting in woodlots on the watershed be inaugurated wherever such woodlots are a part of the general conservation plan.
- 4—A committee be set up in each county for the purpose of reviewing tax delinquent land, so that it may be acquired by the local municipalities for conservation purposes.
- 5—Provision be made for acquiring community pastures and pondage areas.

PERTAINING TO EMPLOYMENT

That:

- 6—Twenty thousand acres of marginal and submarginal land in the northern section of the watershed be withdrawn from agriculture by purchase or expropriation and formed into a protection forest.
- 7—Planting and woodlot management be encouraged in the agricultural area of the watershed, and that post-war employment be used for assistance in this.
- 8—Some of the engineering works recommended in the James, Proctor and Redfern report be carried out to prevent flooding in the Town of Port Hope.
- 9—Adequate water storage ponds be built on the watershed to lessen the possibilities of flooding in the Town of Port Hope.

- 10—Some of the old dams on the Ganaraska River be rebuilt for agricultural and wild life ponds.
- 11—The land along the Ganaraska River be further protected by reforestation, permanent pastures and contour plowing.
- 12—Special conservation practices are needed on certain classes of agricultural land on the watershed for erosion control and the maintenance of productivity.
- 13—Routine surveys be carried out periodically for enumerating the presence and movement of insects and forest disease.
- 14—The botanical family ribes (gooseberries and currants) the alternate host of the white pine blister rust, be eradicated from certain parts of the watershed.
- 15—Recreational centres be established on suitable areas of the watershed.
- 16—The highways of the area be improved by roadside planting and permanent tree snow fences.
- 17—A school be established after the war for the training of non-technical conservation supervisors.

PERTAINING TO SURVEYS

That:

- 18—Many more routine conservation surveys be carried out in the Province, for planning a complete conservation programme.
- 19—Surveys should be planned early in the season and aerial photographs taken well in advance.
- 20—A hydrographic survey be made of the important branches of the Ganaraska River.

PERTAINING TO RESEARCH

That:

- 21—Research in each large area to be surveyed be undertaken in hydrologic influences such as stream-flow, ground water, and the depth of wells; and that a weather station be established, if necessary.
- 22—Gauging stations be established on the Ganaraska River to measure volume of flow and amount of silting.
- 23—Studies be undertaken to determine the relationship between deep seepage from the morainic uplands and ground water lower down the watershed.
- 24—Scientific investigations in wildlife habitat be commenced, to properly plan for restocking the area with fish and game.
- 25—Studies in ecology be undertaken to ascertain the future effect of proposed remedial measures on the soil and flora of the area.

PROJECTS AND COSTS—IN MAN HOURS

WOODLOT IMPROVEMENT.....		672,480
REFORESTATION:		
Open land planting (conifers).....	244,835	
Open land planting (hardwoods).....	48,000	
Woodland planting.....	142,016	
Erosion planting.....	85,040	
Site clearing.....	32,000	
Removing interior fences.....	31,040	
		<hr/> 582,931
FLOOD CONTROL:		
Storage basins.....	365,400	
Improvements at Port Hope.....	200,000	
		<hr/> 565,400
HIGHWAY PLANTING:		
Tree snow fences.....	132,500	
Tree planting (decorative) on highways.....	26,400	
		<hr/> 158,900
WILD LIFE:		
Ponds for wild life.....	26,000	
Restocking fish.....	864	
		<hr/> 26,864
OTHER PROJECTS:		
Boundary fence.....	24,320	
Road and trail building.....	3,600	
Fire guards.....	1,280	
Erosion check dams.....	5,760	
Recreational centres.....	12,000	
Blister rust control.....	12,000	
Insect surveys.....	5,568	
Seed collecting.....	3,000	
Nursery practice.....	13,920	
Miscellaneous.....	15,000	
		<hr/> 96,448
PLANTATION IMPROVEMENT:		
Plantation pruning.....	29,984	
Plantation thinnings.....	3,504	
		<hr/> 33,488
TOTAL.....		<hr/> 2,136,511

The above projects provide work for 600 men for 18 months, or two years, leaving out the winter months.

THE ONTARIO CONSERVATION AND REFORESTATION ASSOCIATION

(The O.C.R.A.)

The O.C.R.A. came into existence because many people throughout Ontario were becoming alarmed regarding natural conditions that are closely related to water supplies. Everyone could see that droughts were becoming more severe; spring freshets and floods were more damaging; wells were failing and streams were ceasing to flow in summer; soil erosion, by both wind and water, was increasing; woodlots, because of cutting and grazing, were disappearing from the countryside and public opinion was rapidly becoming opposed to further destruction of forests and swamps that hold back the water for the use of man and beast.

It was under these conditions and with these problems in mind that county and township officials, school inspectors, government officials representing agriculture and forestry, as well as a number of ardent conservationists all came together during the winter of 1936-37 and organized the O.C.R.A.

The purpose of the O.C.R.A. is to check the destruction of woodlots and to encourage the planting of forest trees. It is, in fact, a movement to conserve all natural resources that are needed to make Ontario productive and to restore the countryside so that every community in Old Ontario will be a pleasant place in which to live.

The officers of the O.C.R.A. are drawn from county councils and from the ranks of genuine conservationists. The organization is financed largely by county councils.

W. H. PORTER,
Secretary.

Box 186,
London, Ont.

